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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,230	08/30/2001	John Whitman	4294.IUS (98-1208.1)	2488

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TRASK BRITT  
P.O. BOX 2550  
SALT LAKE CITY, UT 84110

EXAMINER

DICKEY, THOMAS L

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 06/03/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/944,230	WHITMAN ET AL.	
	Examiner	Art Unit	
	Thomas L Dickey	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 5-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                      | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                             | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2,6,8</u> . | 6) <input type="checkbox"/> Other:  |

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## **DETAILED ACTION**

1. The preliminary amendment filed on 01/24/02 has been entered.

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### ***Election/Restriction***

2. Applicant's election without traverse of claims 1,3,4, and 11-20 in Paper No. 7 is acknowledged.

### ***Oath/Declaration***

3. The oath/declaration filed on 08/30/01 is acceptable.

### ***Drawings***

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the at least one conductively doped region continuous with a surface of said semiconductor substrate and laterally adjacent said at least one recess claimed in claim 4 must be shown or the feature(s) canceled from the claim(s). Figures 12-16 have an unlabeled feature that might be the said at least one conductively doped region continuous with a surface of said semiconductor substrate, but these figures are not adequate because the said feature is not labeled and described in the specification. No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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***Priority***

5. Acknowledgement is made of applicant's claim for domestic priority under 35 U.S.C. 120/121, through utility application 09/542,783 filed 04/04/00.

***Information Disclosure Statement***

6. The Information Disclosure Statements filed on 8/30/01, 3/25/02, and 4/8/02 have been considered. The 3/25/02 IDS duplicates the 4/8/02 IDS.

***Specification***

7. The disclosure is objected to because of the following informalities:

In the specification there is no description of the of the "at least one conductively doped region" claimed in claim 4. This is not considered a §112 issue because the claim itself discloses that the combination including the conductively doped region was in applicant's possession, and it is well known how to make and use a conductively doped region. Nonetheless, the specification must be amended to match the breadth of the claim.

Appropriate correction is required.

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***Claim Objections***

8. Claims 12,13, and 14 are objected to because of the following informalities: The language is inconsistent with the language of the other claims. Claim 13 uses "height" to mean the same thing as other claims use depth to mean. All of 12-14 refer to "depth of," "height of," or "filling" the "container," to mean the same thing as the bulk of the claims do when they refer to "depth of," "height of," or "filling" the recess. The claims must be amended to use the same language for the same thing referred to, throughout.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 13,14, and 20 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant has not shown how to make a material layer substantially filling a container (read "recess for claim 20), having at the same time a thickness that is less than the depth, or half the depth, of the container, and also a substantially planar surface free of abrasive planarization-induced defects. For examination purposes it will be assumed that the invention contemplates a material layer sub-

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stantially filling a container with a thickness less than the depth of the container and a surface that is as planar and as free from abrasion as possible, within known limits.

**10.** The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). The term "laterally" in claim 4 is used by the claim to mean "below," (Note application, figs. 12-16) while the accepted meaning is "next to, or beside."

Correction is required.

***Claim Rejections - 35 USC § 102***

**11.** The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application

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published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1,3,11-13, and 15-20 are rejected under 35 U.S.C. 102(e) as being anticipated by YATES et al. (6,358,793).

With regard to claims 1 and 3, Yates et al. discloses a semiconductor device structure with a substantially planar surface, comprising: a substrate 5-10-15 including at least one recess (no #; it is the recess that is partially filled by part 90) formed therein, and a material layer 90 disposed over the substrate 5-10-15 and substantially filling the at least one recess, the material layer 90 having a substantially planar surface free of abrasive planarization-induced defects, where the material layer 90 comprises a mask material. Note figures 11, 12, 7, and column 10 lines 1-31 of Yates et al.

With regard to claims 11-13, Yates et al. discloses a semiconductor device structure with a substantially planar surface, comprising a substrate 5-10-15 including at least one recess (no #; it is the recess that is partially filled by part 90) formed therein, and a material layer 90, comprising a mask material, both the material layer 90 and the mask being disposed over the substrate 5-10-15 and substantially filling the at least one recess, the material layer 90 having a substantially planar surface free of abrasive planarization-induced defects, wherein the substrate 5-10-15 comprises a stacked capacitor structure including an insulator layer with at least one container recessed therein, where mask material 90 covering a surface of the insulator layer has a thickness of less

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than a height of the at least one container. Note figures 11, 12, 7, and column 10 lines 1-31 of Yates et al.

With regard to claims 15-20, Yates et al. discloses a semiconductor device structure with a substantially planar surface, comprising a substrate 5-10-15 including at least one recess (no #; it is the recess that is partially filled by part 90) formed therein, and a material layer 90 disposed at least partially over the substrate 5-10-15 and at least one intermediate layer 20, comprising at least one of a mask material, an insulative material, and a conductive material, namely, conductive HSG silicon, between the substrate 5-10-15 and the material layer 90, so that the material layer 90 and the at least one intermediate layer 20 each at least partially fill the at least one recess, the material layer 90 having a substantially planar surface substantially free of abrasive planarization-induced defects, where at least one region of the at least one intermediate layer 20 and at least one region of the substrate 5-10-15 is exposed through the material layer 90, and the material layer 90 has a thickness that is less than a depth of the at least one recess. Note figures 11, 12, 7, and column 10 lines 1-31 of Yates et al.

### ***Claim Rejections - 35 USC § 103***

**12.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



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Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over YATES et al. (6,358,793).

Yates et al. discloses a semiconductor device structure with a substantially planar surface, comprising a substrate 5-10-15 including at least one recess (no #; it is the recess that is partially filled by part 90) formed therein, and a material layer 90, comprising a mask material, both the material layer 90 and the mask being disposed over the substrate 5-10-15 and substantially filling the at least one recess, the material layer 90 having a substantially planar surface free of abrasive planarization-induced defects, wherein the substrate 5-10-15 comprises a stacked capacitor structure including an insulator layer with at least one container recessed therein, where mask material 90 covering a surface of the insulator layer has a thickness of less than a height of the at least one container. Note figures 11, 12, 7, and column 10 lines 1-31 of Yates et al. Although Yates et al.'s device does not teach the exact thickness of the mask material as that claimed by Applicant, the thickness differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note *In re Leshin*, 125 USPQ 416.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over YATES et al. (6,358,793) in view of UKITA et al. (6,372,151).

Yates et al. discloses a semiconductor device structure with a substantially planar surface, comprising: a substrate 5-10-15 including at least one recess (no #; it is the re-

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cess that is partially filled by part 90) formed therein, and a material layer 90 disposed over the substrate 5-10-15 and substantially filling the at least one recess, the material layer 90 having a substantially planar surface free of abrasive planarization-induced defects, where the material layer 90 comprises a mask material. Note figures 11, 12, 7, and column 10 lines 1-31 of Yates et al. Yates et al. does not disclose at least one conductively doped region continuous with a surface of the semiconductor substrate and laterally adjacent the at least one recess.

However, Ukita et al. discloses a semiconductor device structure with at least one conductively doped region 32 continuous with a surface of a semiconductor substrate structure 24-14-18 and laterally adjacent at least one recess (no #, it is filled by parts 72-74-76) in the semiconductor substrate structure 24-14-18. Note figure 1J of Ukita et al. Therefore, it would have been obvious to a person having skill in the art to use Yates et al.'s semiconductor device structure along with the at least one conductively doped region such as taught by Ukita et al. in order to combine Yates et al.'s stacked capacitor structure with a MOSFET control to thus provide a functional DRAM employing the stacked capacitor structure of Yates et al.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 703-308-

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0980. The examiner can normally be reached on Monday through Thursday 8 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone-numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

tld  
05/2002

  
Minh Loan Tran  
Primary Examiner